# Integrated Design & Assurance System, IDAS

**INL's SAPHIRE s/w** and
**Item Software's iQRAS s/w**
(Both sponsored by NASA HQ's S&MA)

**ARINC's Raptor s/w**

**Search Technology's TechOASIS s/w**
(Sponsored by US Army)

| | **Probabilistic Risk Assessment (PRA)** | **Operations Analysis** | **Text Mining** |

| Module User | Design, Reliability, Safety, & Technical-Risk Engineers | | | | | Reliability, Maintainability, Supportability (Logistics), Human Factors (Usability), Cost, and Industrial Engineers | | | Quality & Sustaining Engineers | Management | Cost Analyst-Engs. | Reliability Engineers or Statisticians |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Module Purpose | Defines System Elements (BOM)[1] & Element Failure Rates | Defines System Structure & Calculates Reliability & Availability[2] | Analyzes Element Failure Modes (Bottoms Up) | Identifies Conditions and Factors that Cause an Undesired Event to Occur (Top-Down) | Evaluates Systems with Multiple States (e.g., up, down, degraded) | Analyzes Cost of Reliability, Availability[2], Maintenance Intervals, & Spares | Calculates System Repair & Maintenance Measures | Analyzes Risks Associated with Human Error | Provides a Closed-loop Problem Reporting & Corrective Action System | Provides Electronic Reporting & Notification | Calculates Total Cost of Ownership | Uses Field & Test Data to Calculate Probability of Failure |
| Module Name | Reliability Prediction | Reliability Block Diagram | FMEA[3] (& Hazard Analysis) | Event Tree | Fault Tree | Markov | OpSim | Maintain-ability | Human Factors (NASA Sponsored) | FRACAS[4] with Audit Feature | Dashboard & Alert Feature | Life-Cycle Cost | Weibull |

**Relex Software's Studio s/w Enterprise Edition-All Modules**
(NASA Centers as well as various contractors have the Relex software in some form)

**Fault Tree Files**

**EPRI's CAFTA s/w**

**NASA's Problem Reporting & Corrective Action (PRACA) Data**

**Multiple & Dissimilar PRACA Databases**

NASA's PRACA data can be imported via snap shots or live connectors.

**Legend:** In Work = ` _ _ _ _ _ _ _ ` ; Not Started = ` _._._._._ ` ; File-Transfer Capability Completed = `_____` ; Colored Boxes = Software Modules; Shaded Boxes = Not Active at KSC

**Notes:** 1 – BOM = Bill of Materials; 2 – Availability applies to repairable systems and is a function of Reliability and Maintainability; 3 – FMEA = Failure Mode & Effects Analysis; 4 – FRACAS = Failure Reporting and Corrective Action System.